PETROGRAPHY OF CAPE YORK AND GRANT: IRONS WITH SIMPLE Pd-Ag SYSTEMATICS

J.M. Teshima, G.J. Wasserburg, and A. El Goresy, *The Lunatic Asylum, Div. Geol. & Planet. Sci., California Inst. of Technology, Pasadena, CA 91125*

The presence of excess ^{107}Ag from the decay of extinct $^{107}Pd(t_{1/2} = 6.5$ my) has been determined in IVB, IVA and two anomalous irons (Kaiser and Wasserburg, 1983). Excesses of ^{107}Ag in groups IIIAB and IIB meteorites, Cape York and Grant, and Derrick Peak, respectively, show the widespread presence of ^{107}Pd in the early solar system (Chen and Wasserburg, 1983). Internal isochrons were established between metal and sulfide for the two IIIAB irons but similar data for Gibeon (IVA) and Santa Clara (IVB) reveal a complicated Pd-Ag evolution. Petrologic descriptions of the specific meteorites analyzed isotopically are needed to establish criteria which distinguish isotopically "well behaved" irons from those with more complicated Pd-Ag systematics. The petrography of Santa Clara and Gibeon have been presented (El Goresy *et al.*, 1984). We will present the petrography of the "well behaved" meteorites Grant USNM #836 and Cape York (Kracher *et al.*, 1977). Grant consists of a 1.5 cmϕ sulfide nodule in metal matrix. The sulfide nodule is a single crystal of troilite, lenticularly twinned, indicating that Grant has been mechanically deformed. The nodule is mantled by a discontinuous band of kamacite and slightly fractured swathing schreibersite ~ 150 μm wide. The surrounding metal exhibits a coherent, medium grained Widmanstätten pattern. Plessite fields have uninterrupted taenite borders supporting the premise that Grant has suffered only minor deformation and no plastic flow or remelting. Accessory minerals in the metal and sulfide were determined to locate possible Ag-bearing phase(s). The metal contains highly fractured Brezina lamellae with oblong (FeMn) phosphate inclusions (< 1 mm, length), idiomorphic chromite (as discrete crystals associated with troilite), schreibersite and anhedral native-Cu. Minerals in the sulfide nodule are schreibersite, pentlandite, mackinawite, chalcopyrite, ~ 50 μm idiomorphic chromite, (FeMn) phosphates and native-Cu. The sample of Cape York contains a large 3 cmϕ sulfide in metal matrix. The sulfide is essentially a single crystal of troilite which shows pervasive undulatory extinction due to deformation. It is rimmed by swathing schreibersite and taenite. The metal matrix displays an unaltered, medium-grained Widmanstätten pattern. Plessite fields adjacent to the sulfide nodule have kinked taenite borders reflecting minor deformation. These observations imply that Cape York suffered greater deformation than Grant but that sulfide and metal have retained primary textures. Accessory phases are described (Buchwald, 1975) but we note veinlets of native-Cu in idiomorphic chromite and swathing schreibersite. Late forming phases which may be Ag-bearing are Cu, chalcopyrrhotite, djerfisherite, and phosphates. Cape York and Grant are meteorites which have suffered slight shock deformation but lack textures which reflect melting of metal and sulfide. Santa Clara and Gibeon each have textures in which metal and sulfide have been intimately mixed by a post-formational melting episode which must have played a major role in producing confusing Pd-Ag isochrons. New data (Malvin *et al.*, 1984) shows an apparent depletion of Cu in iron meteorites relative to Cl-normalized Cu/Ni ratios. The presence of native-Cu in several IIIAB irons implies that these trends may be related. We believe that Cu-bearing minerals in sulfides in IIIAB irons may be more common than originally thought and may be an explanation for Cu depletions in the metal phase.

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A HYDRATED INTERPLANETARY DUST PARTICLE CONTAINING CALCIUM- AND ALUMINUM-RICH PYROXENE: POSSIBLE RELATIONS TO CARBONACEOUS CHONDRITES

K. Tomeoka and P.R. Buseck, *Departments of Geology and Chemistry, Arizona State University, Tempe, AZ 85287*